

ULTRA-THIN CORROSION-RESISTANT COATING FOR METAL SURFACES



Inventor

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License Status

Available for Licensing

- Non-Exclusive
- Exclusive

Patent Status

U.S. Patent

7,507,480

PRODUCT

An ultra-thin (less than 10 nanometers thick) corrosion-resistant film, namely a cerium acetate-modified aminopropylsilane triol precursor, for metal surfaces, especially aluminum. The corrosion-resistant film is made of a partially cross-linked amido-functionalized silanol component in combination with rare-earth metal oxide nanoparticles, especially environmentally benign cerium-based salts, e.g., cerium acetate.

COMPETITIVE ADVANTAGE

The technique provides a simple, fast and economical method for producing ultra-thin corrosion-resistant coatings. The corrosion resistance of coatings made using this technology is comparable and even superior, to chromium-based coatings. In particular, this technology is environmentally safe and provides an excellent coverage for substrate metals with fine structural details compared to the chromium-based coating technologies.

APPLICATIONS

Industries involved in making ultra-thin corrosion resistant coatings for metal surfaces or in making aluminum fins will find immediate use of our technology. In addition, geothermal binary power plants, that need to protect air-cooled condensers from corrosion, will find that this coating provides protection for aluminum-finned condensers against brine-induced corrosion.

Reference: Sugama, T., "Cerium Acetate-modified Aminopropylsilane Triol: A Precursor of Corrosion-preventing Coating for Aluminum-finned Condensers", *Journal Coating Technology.*, 2, 649-659 (2005).

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